

SOP

XSD Beamline 8ID-E, 8ID-I

Standard Operating Procedure for Carcinogen Handling

Updated 11/22/2017

1. Designated Areas and Qualified Personnel

Preparation of the carcinogens will take place in the 8-ID chemistry laboratory (432 room E030) by designated personnel. All work with carcinogen samples will be performed under the fume hood in the lab, with these exceptions: (1) Langmuir monolayers, which float on liquid surfaces, must be prepared *in situ* at the beamline according to the procedures below; (2) solvent vapor annealing studies and (3) *in situ* spin coating experiments are permitted with proper use of the hutch ventilation system..

Designated personnel will be appointed by the 8-ID Chemical Safety Coordinator for each ESAF.

2. Description of Operations Involving the Sample

All preparation will be done under the fume hood to prevent any release of contaminants. Additional handling of the samples will only be done while wearing impervious gloves, and they will be transported from the lab to the beamline using secondary confinement, such as plastic bags or trays. This includes loading of syringes used for spin coating or depositing Langmuir monolayers and the loading of gas washing bottles for solvent vapor annealing.

3. Hazard Information Training

An SDS sheet will be posted outside the lab in the designated area. Signage will also be posted on the front of the fume hood to give notification of the hazards. The designated people will review the SDS sheet and understand the hazards and safety procedures outlined for carcinogens. When carcinogens are handled inside the experimental hutch, signage will be posted outside of the hutch.

4. Engineering Exposure Controls

All work is to be completed in the fume hood to prevent contamination of the laboratory. All waste will be disposed of in accordance with point 6. The fume hood will be wiped clean upon completion of sample preparation. For solvent vapor annealing, the solvent reservoir must be placed within an impervious secondary container such as a steel tray or disposable aluminum pan. For Langmuir monolayer deposition, spin coating and solvent vapor deposition, the hutch ventilation hose must be positioned with a hood over the sample chamber. In addition, for solvent vapor annealing the sample chamber exhaust must be connected to the hutch ventilation hose.

5. Personal Protective Equipment

Minimum PPE required for the safe handling of carcinogens include gloves and safety glasses. All sample preparation will be done with adequate ventilation.

6. Disposal

Disposable gloves and other miscellaneous wastes will be temporarily stored in the fume hood in a plastic zip-loc bag bearing the appropriate labels and markings. Waste disposal procedures will be followed at the end of the experiment. If disposable syringes and needles are used, they must be disposed of into a sharps container in the fume exhaust hood, the syringes must be collected in a ziplock bag for proper disposal. If needles are not needed to pierce septa, then blunt tipped needles or pipettes should be used to avoid puncture hazards.

7. Spreading Langmuir Monolayers

Designated experimenters making measurements at liquid surfaces may spread Langmuir monolayers from chloroform-based spreading solutions. The experimenters must ensure that the total volume of solution used is kept small, about 100 microliters. Experimenters will wear appropriate PPE, and take care to rinse syringes in the lab under the fume hood.

8. Solvent vapor annealing experiments

Designated experimenters performing solvent vapor annealing measurements may use mass flow controllers and solvent wash bottles to introduce solvent vapor into sealed sample chambers with a single vent for exhaust leading to the hutch ventilation hose. The solvent vapor system must be inspected for leaks at the start of each experiment. At any point in the experiment, work must halt if a leak is discovered.

9. In Situ spin coating deposition

Designated experimenters performing in situ spin coating measurements may use solutions prepared and loaded in the lab fume exhaust hood and transport them to the beamline in a plastic bag.